SEQUENCE LISTING

(1) GENERAL INFORMATION:

    (i) APPLICANTS: Phillip Dan Cook
                    Andrew Kawasaki

    (ii) TITLE OF INVENTION: Sugar Modified Oligonucleotides

    (iii) NUMBER OF SEQUENCES: 37

    (iv) CORRESPONDENCE ADDRESS:
        (A) ADDRESSEE: Woodcock Washburn Kurtz Mackiewicz and Norris
        (B) STREET: One Liberty Place - 46th Floor
        (C) CITY: Philadelphia
        (D) STATE: PA
        (E) COUNTRY: U.S.A.
        (F) ZIP: 19103

    (v) COMPUTER READABLE FORM:
        (A) MEDIUM TYPE: 3.5 inch disk, 720 Kb
        (B) COMPUTER: IBM PC compatible
        (C) OPERATING SYSTEM: PC-DOS/MS-DOS
        (D) SOFTWARE: WordPerfect 5.1

    (vi) CURRENT APPLICATION DATA:
        (A) APPLICATION NUMBER: 08/471,973
        (B) FILING DATE: 06-JUN-1995
        (C) CLASSIFICATION: N/A

    (vii) PRIOR APPLICATION DATA:
        (A) APPLICATION NUMBER: 835,932
        (B) FILING DATE: 05-MAR-1992

    (viii) ATTORNEY/AGENT INFORMATION:
        (A) NAME: Joseph Lucci
        (B) REGISTRATION NUMBER: 33,307
        (C) REFERENCE/DOCKET NUMBER: ISIS-2005

    (ix) TELECOMMUNICATION INFORMATION:
        (A) TELEPHONE: 215-568-3100
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(2) INFORMATION FOR SEQ ID NO:1:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (iv) ANTI-SENSE: yes
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

CCACACCGAC GGCGCCC   17

(2) INFORMATION FOR SEQ ID NO:2:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 20 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (iv) ANTI-SENSE: yes
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

CTTATATTCC GTCATCGCTC   20

(2) INFORMATION FOR SEQ ID NO:3:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 20 bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

    TCCGTCATCG CTCCTCAGGG   20

    (2) INFORMATION FOR SEQ ID NO:4:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 20 bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

    AAAACGTCAG CCATGGTCCC   20

    (2) INFORMATION FOR SEQ ID NO:5:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 18 bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

    TTCTCGCTGG TGAGTTTC   18

    (2) INFORMATION FOR SEQ ID NO:6:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 17 bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

    TCTCGCTGGT GAGTTTC   17

    (2) INFORMATION FOR SEQ ID NO:7:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 20 bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

    TCCCGCCTGT GACATGCATT   20

    (2) INFORMATION FOR SEQ ID NO:8:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 20 bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

    TCCTCCTCCC CGCGGCGGGT   20

    (2) INFORMATION FOR SEQ ID NO:9:

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 20 bases
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

    CTCGCCCGCT CCTCCTCCCC   20

    (2) INFORMATION FOR SEQ ID NO:10:
        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 20 bases
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

    TTCTCGCCCG CTCCTCCTCC   20

    (2) INFORMATION FOR SEQ ID NO:11:
        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 20 bases
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

    TTCTCCTCCT CCCCTGGCAG   20

    (2) INFORMATION FOR SEQ ID NO:12:
        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 20 bases
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

    CTGGCTTCTC CTCCTCCCCT   20

    (2) INFORMATION FOR SEQ ID NO:13:
        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 20 bases
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

    CCTGCTGGCT TCTCCTCCTC   20

    (2) INFORMATION FOR SEQ ID NO:14:
        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 20 bases
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear
        (iv) ANTI-SENSE: yes
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

    TCTGGCGCTG CACCACTCTC   20

    (2) INFORMATION FOR SEQ ID NO:15:

           (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 20 bases
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: single
               (D) TOPOLOGY: linear
          (iv) ANTI-SENSE: yes
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

    UAGGAGAUGC CUAAGGCUUU   20

    (2) INFORMATION FOR SEQ ID NO:16:
           (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 20 bases
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: single
               (D) TOPOLOGY: linear
          (iv) ANTI-SENSE: yes
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

    GCUAUGUCGA CACCCAAUUC   20

    (2) INFORMATION FOR SEQ ID NO:17:
           (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 20 bases
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: single
               (D) TOPOLOGY: linear
          (iv) ANTI-SENSE: yes
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

    CAUAGGAGAU GCCUAAGGCT   20

    (2) INFORMATION FOR SEQ ID NO:18:
           (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 21 bases
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: single
               (D) TOPOLOGY: linear
          (iv) ANTI-SENSE: yes
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

    GCGUUGCTC TTCTTCUUGC G   21

    (2) INFORMATION FOR SEQ ID NO:19:
           (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 21 bases
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: single
               (D) TOPOLOGY: linear
          (iv) ANTI-SENSE: yes
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

    GCGUUUGCTC TTCTUCUUGC G   21

    (2) INFORMATION FOR SEQ ID NO:20:
           (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 20 bases
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: single
               (D) TOPOLOGY: linear
          (iv) ANTI-SENSE: yes
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

    UGCATCCCCC AGGCCACCAT   20

    (2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 15 bases
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:
CGACTATGCA AGTAC   15

(2) INFORMATION FOR SEQ ID NO:22:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

CTCGTACCTT CCGGTCC   17

(2) INFORMATION FOR SEQ ID NO:23:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

GAGCUCCCAG GC   12

(2) INFORMATION FOR SEQ ID NO:24:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

CGACUAUGCA AGUAC   15

(2) INFORMATION FOR SEQ ID NO:25:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

UCCAGGUGUC CGAUC   15

(2) INFORMATION FOR SEQ ID NO:26:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 13 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

TCCAGGCCGU UUC   13

(2) INFORMATION FOR SEQ ID NO:27:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 13 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

TCCAGGTGTC CCC   13

(2) INFORMATION FOR SEQ ID NO:28:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

CUCGUACCUU CCGGUCC   17

(2) INFORMATION FOR SEQ ID NO:29:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 18 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

CTCGTACCTT TCCGGTCC   18

(2) INFORMATION FOR SEQ ID NO:30:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 18 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

GAGCAUGGYA AGGCCAGG   18

(2) INFORMATION FOR SEQ ID NO:31:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 18 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

CUCGUACCUU UCCGGUCC   18

(2) INFORMATION FOR SEQ ID NO:32:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 16 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32

GCGTTTTTTT TTTGCG   16

(2) INFORMATION FOR SEQ ID NO:33:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 19 bases
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33

CGCAAAAAAA AAAAAACGC   19

(2) INFORMATION FOR SEQ ID NO:34:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 47 bases
        (B) TYPE: nucleic acid

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                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:
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ACATTATGCT AGCTTTTTGA GTAAACTTGT GGGGCAGGAG ACCCTGT   47

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    (2) INFORMATION FOR SEQ ID NO:35:
        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 29 bases
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:
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GAGATCTGAA GCTTCTGGAT GGTCAGCGC   29

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    (2) INFORMATION FOR SEQ ID NO:36:
        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 35 bases
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:
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GAGATCTGAA GCTTGAAGAC GCCAAAAACA TAAAG   35

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    (2) INFORMATION FOR SEQ ID NO:37:
        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 33 bases
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:
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ACGCATCTGG CGCGCCGATA CCGTCGACCT CGA   33